**Center Innovation Fund: AFRC CIF**

# Electric Aircraft Systems Technology Development

Completed Technology Project (2010 - 2012)

## Project Introduction

This project looks at multiple manned/unmanned full-scale/sub-scale flying research prototypes that will lead to the integration of electric propulsion technology on to a full-scale production prototype for commercial use. The goal of this CIF effort is to develop a NACA-like database of electric propulsion design variables such as propeller and motor configurations, controller and batter technologies, acoustic levels and evaluation of energy consumption.

The focus of our initial efforts is on the proper techniques for measurement of motor/ controller efficiency and total energy used measurement techniques. Further efforts will include propeller efficiency and acoustic measurements, battery performance, hybrid configurations and environmental performance in the aircraft environment. The goal of this CIF project is to develop a static propulsion test stand for measurement of thrust, torque, RPM, efficiency, and noise of individual components along with the integrated systems. The data from the system will be used to understand configuration and optimization problems on a smaller scale before moving to larger scale by providing basic research "answers". This will help technology products with maturity levels that enable advancement toward large transport and general aviation aircraft, as well as N+3 vehicles Technical Plan The project is to determine the best test approach, perform systematic testing akin to airfoil testing during the NACA days, and publish the results. This will allow manufacturers access to a publicly available database to compare and design new electric systems.

## Anticipated Benefits

Currently no funded missions


Electric Aircraft Systems Technology Development

## Table of Contents



## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Center / Facility:**

Armstrong Flight Research Center (AFRC)

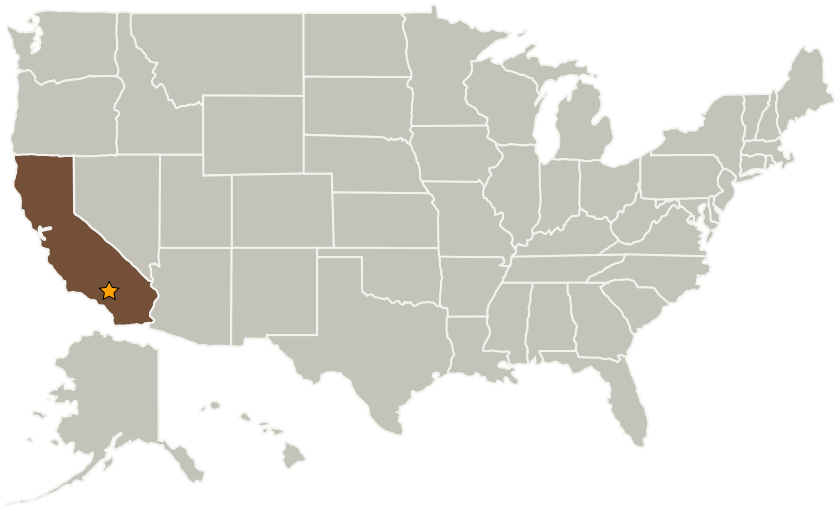
**Responsible Program:**

Center Innovation Fund: AFRC CIF

# Electric Aircraft Systems Technology Development

Completed Technology Project (2010 - 2012)

## Primary U.S. Work Locations and Key Partners



| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| ★Armstrong Flight Research Center(AFRC) | Lead Organization | NASA Center | Edwards, California |

| Primary U.S. Work Locations |
|---|
| California |

## Project Management

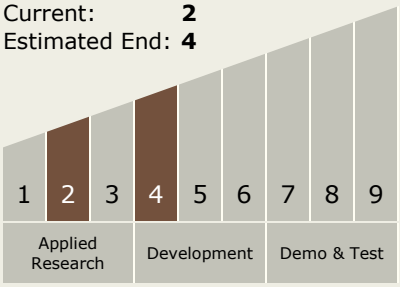
**Program Director:**
Michael R Lapointe

**Program Manager:**
David F Voracek

**Project Manager:**
Minoo N Dastoor

## Technology Maturity (TRL)

Start: **2**
Current: **2**
Estimated End: **4**




## Technology Areas

**Primary:**

- TX01 Propulsion Systems
  - TX01.3 Aero Propulsion
    - TX01.3.8 All Electric Propulsion